been formed in a lake dammed to the east and west by ice in a moraine, a view which elicited considerable comment and disagreement from a number of glacialists present. Prof. Blake described areas in the Harlech Mountains, some of which were floored by bare, ice-scratched rocks, side by side with others covered by thick drift deposits. Prof. Bonney, judging by the temperature at which glaciers now form in the Alps, came to the conclusion that a fall of 15° to 20° F. would be quite sufficient to cause all the known glaciation in the northern hemisphere. Mr. E. P. Culverwell read a paper entitled "An Examination of Croll's and Ball's Theory of Ice Ages and Genial Ages," in which he stated that an appeal to figures conclusively proved the inadequacy of the astronomical theory as at present formulated. By calculating the comparative solar heat of the high eccentricity winter of 199 days, and that of 199 coldest days of the present winter, he showed that the isochimenals would be about 4° of latitude further south, and the isotherals more than 4° further north, then than now. In the "genial age" the shifting would not be more than 2½°. This cause he considers totally inadequate to account for glacial and genial ages, and therefore falls back on changes in physical geography for the former, and shift of the pole, or greater solar and terrestrial activity, for the latter. In the discussion Sir Robert Ball defended his position, but was further attacked by Prof. Fitzgerald and other speakers.

Prof. Blake endeavoured to show that by the lowering of its centre of gravity as a whole the further end of an ice-sheet might be raised and carry boulders and detritus up a slope. The Rev. E. Jones presented the final report on the Elbolton Cave, stating that no palæolithic remains had been found, and that the investigation was consequently abandoned. The preliminary work, however, in the Calf Hole Cave, near Skipton, was more hopeful, and already a hafted implement, made of a chisel-like tooth bedded in antler and mounted in wood, had been found. In a short paper on the palæolithic section at Wolvercote, near Oxford, Mr. Montgomerie Bell described the section as follows: (1) a "northern drift" and subangular gravel resting in eroded hollows of the Oxford clay. (2) A river gravel containing shell seams, and in whose lowest bed palæolithic implements associated with mammoth, *Cervus elaphus*, *Bison priscus*, &c., have been found. (3) A bed of peat containing the remains of local plants. (4) Sand, mud, and hail close the section. Two palæolithic implements were recorded by Mr. Bruce Foote from an old alluvium, through which the Sabarmati river in Guzerat had cut a channel, varying from 100 to 200 feet in depth.

Dealing with questions of physical geology, Mr. Lobley tried to show that the contraction theory would not explain volcanoes and earthquakes. Dr. Tempest Anderson described three types of subsidences occurring in connection with volcanic rocks in Iceland; the most common type was due to a falling crust where the inner lava stream escaped, others were due to earthquakes, and still others to faulting, probably caused by subsidence of a volcanic centre as a whole. Dr. Johnston-Lavis recorded his observations on the activity of Vesuvius during the year. Mr. De Rance reported in underground waters. Prof. Herdman drew attention to the geological results flowing from his investigation of the bed of the Irish Sea. Prof. Sollas announced that arrangements were in progress for commencing the boring of a coral island. Prof. Hennessy described the channels of streamlets in estuaries as possessing a section constructed of two catenary curves, the only shape which gives a constant velocity whatever the depth of the stream; and Sir H. Howorth passed a series of strictures on current geological nomenclature, with suggestions for its revision, which will doubtless receive the attention due to so high an authority in these matters.

Mr. C. Davison's report on earth tremors contained an account of the trial and modifications of Mr. H. Darwin's bifilar pendulum, and of the horizontal pendulum used at Nicolaiew; then followed an elaborate analysis of the pulsations of the Greek earthquake of this year, showing how they spread to one observatory after another, and were felt at Rome, Siena, Nicolaiew, Potsdam, Kew, and Birmingham. In his report on geological photographs, Mr. Jeffs stated that the collection now amounted to 1055, and that the time seemed to have arrived when it should be housed in some convenient and central position, although it was still necessary to add to the collection, so as to make it thoroughly representative of the whole country. A number of photographs were exhibited and slides from some of them displayed at the second conversazione.

NOTES.

M. Gustave Cotteau, a Correspondent of the Paris Academy, in the Section d'Anatomie et Zoologie, died at Paris on the 10th inst.

Mr. M. A. Ryerson has presented to the University of Chicago the Ryerson Physical Laboratory, built at a cost of 250,000 dollars.

The International Congress of Applied Chemistry, which has just finished a session at Brussels, will hold its next meeting at Paris in 1896.

Dr. D. F. Oltmanns has been appointed Extraordinary Professor of Botany at the University of Freiburg-i. B.

The Imperial Acclimatisation Society of Moscow has founded a botanical section for the purpose of collecting materials for a Flora of Russia. The co-operation is invited of all who are able to assist in this work. Communications should be addressed to the Director of the Polytechnic Museum, Moscow.

Mr. H. W. Unthank informs us that while shore-hunting at Brightlingsea on August 4, he came upon a stranded Aurelia which exhibited a pentamerous instead of the usual tetramerous symmetry. The specimen is at present in the Brightlingsea Marine Laboratory of the Essex County Council.

Mr. Fred N. Scott, Assistant Professor of Rhetoric in the University of Michigan, has issued, in the form of a leaflet, a series of questions on the psychology of usage. He wishes to ascertain the origin of dislikes, especially of arbitrary, unreasoning dislikes, for certain words and phrases. He will be glad to send a copy to anyone who is interested in the subject and who will take the trouble to answer the questions.

The annual general meeting of the Federated Institution of Mining Engineers will be held in Newcastle-upon-Tyne, on Wednesday, September 5, in the Wood Memorial Hall of the North of England Institute of Mining and Mechanical Engineers. The papers down for reading are:—"The Stetefeldt Furnace," by Mr. C. A. Stetefeldt; "Walling and Sinking simultaneously with the Galloway Scaffold," by Mr. John Morison; "Timber Bridges and Viaducts," by Mr. Morgan W. Davies; "Explosions in Nova Scotian Coal-mines," by Mr. Edwin Gilpin, jun.; and "The Shaw Gas-tester for detecting the Presence and Percentages of Fire-damp and Choke-damp in Coal-mines, &c.," by Mr. Joseph R. Wilson. There will also be discussions on other papers, and various excursions.

The cholera epidemic is slowly spreading, especially in European Russia. Since the end of June, fifteen new districts in Russia have been declared to be infected, making a total of about forty. In Austria-Hungary, in many towns situate on the Vistula, and in Belgium, the disease has extended, and a number of fatal cases have occurred in places in Northern Holland. The Local Government Board is keeping a close watch on the progress of the epidemic, and every precaution is being taken to prevent it from obtaining a foothold in this country. Some anxiety will be felt for a month or so, for during this period the risk of infection is greatest. The dismal weather we have been experiencing this summer, though hardly conducive to pleasant holidays, has one redeeming feature, for it is decidedly unfavourable to the development of a cholera epidemic.

By the death of Dr. C. R. Alder Wright, at the end of last month, science lost a tireless and enthusiastic worker. He was educated at the Owens College, Manchester, and early showed an aptitude for scientific research. His work extended over a large part of the domain of chemistry. It comprises, says the *Chemical News*, "investigations of simple substances, like hydriodic acid, and some of the most complex substances, like the vegeto-alkaloids, upon which he laboured for many years—sometimes alone, and sometimes in conjunction with Matthiessen and others. These researches deserve to be classical if any researches do, and they occupy an entire department of organic chemistry." Another subject to which Dr. Wright devoted great attention was the determination of chemical affinity in terms of electromotive force. The versatility of his genius is shown by the different subjects of his numerous papers. Isomeric terpenes, the smelting of iron in blast-furnaces, some points in chemical dynamics, and certain voltaic combinations, are a few of the subjects taken up by him. In 1889 he commenced a series of valuable communications to the Royal Society, on "Ternary Alloys," and the seventh part of the series was read before the Society at the beginning of last year. Thorough and conscientious in everything he undertook, Dr. Wright will always be regarded with esteem throughout the world of science.

THE Paris Société d'Encouragement pour l'Industrie Nationale is constantly giving evidence of its usefulness. The latest proof of this is to be found in the publication of a circular on the "Unification des Filetages et des Jauges de Tréfilerie." The Society has had the question of a standard screw-pitch and wire-gauge in hand since the end of 1891. It was, however, only three months ago that a meeting was held for the purpose of discussing the various systems suggested, and at that meeting the scales expounded in the pamphlet before us were accepted. To secure uniformity in the manufacture of screw-threads, the Society proposes a system, to be known as the "Système Français," in which the pitch increases in steps of half a millimetre, from a screw having a diameter of six millimetres and a pitch of one millimetre (No. 0) to one having a diameter of 148 millimetres and a pitch of 10·5 millimetres (No. 19). The formula which, in this system, allows the diameter (D) corresponding to any pitch to be deduced is $D = p(p + 8) - 1{\cdot}5 \div 1{\cdot}3$, where p is any pitch expressed on the adopted scale. By means of this, it is possible to extend the new system to screws of any diameter, and the number of the screw of which the diameter had been thus determined would be equal to the number of half-millimetres expressing the pitch, *minus* two. For screws less than six millimetres in diameter the standard drawn up by M. Thury for the Société des Arts of Geneva is adopted. In addition to promulgating these standards of screw construction, the Société d'Encouragement has developed a decimal system of gauging wires. In this system, the numbers of the wires express their diameters in tenths of millimetres; thus, a No. 7 wire has a diameter of 0·7 mm. Such a method of designating wires is as simple as it is scientific. In France and other countries using metric standards, the introduction of the new system will be comparatively easy; but we regret to say that in this land of complicated weights and measures, there is little hope of its adoption.

THE general sitting of the German and Austrian Alpenverein was held this year in Munich from August 8 to 11. At the end of the Congress several tours were conducted into the Bavarian and Austrian highlands. The Congress was attended by more than 6000 members, by delegates representing Alpine clubs in other countries, by Bavarian State delegates, and others. Business matters were smoothly arranged, the Central Committee showing an annual income of £9850, and in addition £5000 in hand. There are now 214 local sections of the Alpenverein, each of which pays a certain portion of the fees of membership to the Central Committee and retains the rest for independent income and outlay. Out of an unostentatious beginning, twenty-five years ago, has grown a club with a membership of over 31,000, and a many-sided activity and vigour of life promising a still greater future. The object of the Verein is to improve travelling in the Alps, and to increase our knowledge of them. Again, the management of the guides is entirely conducted by the Verein; the guides being occasionally placed for a short course of training in some central town. The Munich section is the largest of the Alpenverein sections, and was therefore well able to entertain the members generously. The halls in which the great festival of the Congress was held on Thursday, the 9th inst., were decorated on a magnificent scale. An exhibition of maps and models was held in the Academy of Sciences. The relief of the Jungfrau Group, by Simon, modelled to a scale of 1:10,000, attracted great attention. The surest proof of the success of the Alpenverein in its efforts for Alpine travelling is its popularity among the mountain inhabitants. They honour it for the good it has done their wild country and for the intercourse it has opened up. Meanwhile the Alpenverein plays its part worthily in the wider arena of science as journalist, cartographer, meteorologist, geologist, botanist, and all in no small measure.

DR. P. MIQUEL contributes to the *Diatomiste* an important paper on the re-establishment of the size of diatoms. This takes place, according to this observer, mainly by the activity of the nucleus. The protoplasm within a micro-frustule clothes itself with a thick extensible membrane, frees itself from the valves which imprison it, attains the normal size, and then secretes a siliceous envelope. No process analogous to conjugation could be detected by Dr. Miquel in a vast number of observations on many different species. He proposes the abolition of the terms auxospore and sporangial frustule, as not expressing accurately any process which actually takes place in the multiplication of diatoms.

THE Department of Science and Art has issued the following list of successful candidates for National Scholarships, Royal Exhibitions, and Free Studentships, awarded upon the results of the May Examinations this year. National Scholarships for Mechanics—Arthur H. Barker, 23, fitter, Pontefract; Edward R. Amor, 18, engineer apprentice, Devonport; John T. Rieley, 25, science teacher, Birmingham; Charles B. Brodigan, 24, draughtsman, London. National Scholarships for Chemistry and Physics—Charles A. West, 24, teacher, Tottenham, Middlesex; William H. White, 15, student, Ipswich; Harry Dean, 17, student, Manchester; William C. Reynolds, 24, pharmacist, London; John Lister, 18, student, Stockport. National Scholarships for Biological subjects—Ernest Smith, 25, assistant teacher, Huddersfield; Frank H. Probert, 17, student, London. National Scholarships—George M. Russell, 22, shipwright apprentice, Portsmouth; Samuel Stansfield, 21, engineering student, Todmorden; Gilbert T. Morgan, 23, chemist, Huddersfield; William G. Hall, 18, student, Nottingham; Arthur S. Cox, 17, student, Southampton; Frederick T. Munton, 25, joiner, Derby; George Wilson, 22, mechanical engineer, Sheffield; George E. Ashforth, 16, student, Manchester; George L. Overton, 19, watchmaker, Bradford, Yorks; Norton Baron, 21, engineering student, Ulceby, Lincs.; Ernest E. L. Dixon, 18, student, London. Royal Exhibitions—Frank Fisher, 19, engineer, Brighton; Clarence Smith, 18, student, Brighton; William H. Eccles, 18, apprentice druggist, Barrow-in-Furness; Frank G. Edmed, 17, student, Brighton; Henry T. Hildage, 19, fitter, Altrincham; Robert H. Watson, 24, student, Dublin; Harold Hibbert, 16, student, Manchester. Free Studentships—John W. Button, 23, tool fitter, Oldham; George H. Stanley, 17, student, London; Walter Eraut, 19, mechanical engineer's apprentice, London; I. William Chubb, 23, draughtsman, London; Robert H. H. Duncan, 15, student, Sunderland; George George, 18, student, Bristol. Percy

Nicholls, 23, engineer, of Pontefract, obtained the third place in order of merit in the competition for National Scholarships, &c., but withdrew before the awards were actually made.

THE separation of minerals of high specific gravity has recently been greatly facilitated by the introduction of the fused double nitrate of silver and thallium, originally due to Dr. J. W. Retgers. When these nitrates are brought together in the molecular proportion of 1 : 1, they yield a double salt, which fuses at 75° C. to a clear, mobile liquid, having a specific gravity of about 5 and miscible with water in all proportions at temperatures between its melting point and 100° C. The melting point also diminishes rapidly as water is added, going down to 50° or 60° C., and fusion and solubility pass uninterruptedly into one another. We have thus at our command for the separation of mineral particles a liquid far exceeding in specific gravity any of the previously described heavy solutions, and which has the advantage of being practically colourless, neutral, soluble in water, and of being readily recovered from the aqueous solution by simple evaporation on the water bath. Some further hints upon the use of this convenient medium are given in the current number of the *American Journal of Science*, by Messrs. Penfield and Kreider. Separations may be made in test tubes heated in a water bath. After a separation is completed and the fusion cooled, the test tube is broken and the solid cake divided, when the heavier and lighter portion may be obtained by dissolving the double salt. If fractional separations are required, the fused salt may be placed in a tube with a narrow neck at the bottom, into which is ground a glass rod to serve as a stopcock. This apparatus slips inside of a test tube to within a few millimetres of the bottom. The whole is heated in a beaker of hot water, and the liquid is stirred by means of a glass rod bent into a semicircle at the bottom. Heavy particles are drawn off by raising the ground glass rod. Small particles getting caught in the stopper can usually be ground out by twisting the rod, but in no case will such an accident cause great inconvenience.

THE annual report for 1893, just received from the Department of Mines and Agriculture, New South Wales, states that the Government metallurgical works will probably be started this year. These works in conjunction with the School of Mines which has been established at the Sydney University, enables the colony to offer as complete and effective a course of training in mining and metallurgy as can be obtained in Great Britain. The report consists largely of statistics relating to the output, value, &c., of various minerals. A boring made at Cremorne Point is of interest. Prof. T. W. E. David made some determinations of the temperature of this bore. The hole was 2929 feet deep, but the bottom 29 feet (about) was silted up with the powdered rock produced by the cutting action of the diamond drill used in the boring. From 2900 feet to within 300 feet of the surface, the bore was filled with water, the column being, therefore, 2600 feet high, and giving a maximum pressure of, approximately, a trifle over half a ton per square inch. The thermometers used were hermetically sealed in wrought-iron tubes and surrounded with brass filings and brass turnings. The readings obtained showed that the rock temperature at a depth of 2730 feet was 97°·5 F. The mean surface temperature at Sydney is about 63° F., so the rate of increase was 1° F. for about every 78 feet 10 inches.

THE *Bulletin* of the Royal Gardens, Kew, No. 92, for August 1894, is entirely occupied by a summary of information relating to Bananas and Plantains, with descriptions of the species and principal varieties of *Musa* grown for use and ornament.

FROM thirty to forty volumes are issued yearly in the comprehensive "Encyclopédie Scientifique des Aide-Mémoire" series published jointly by MM. Gauthier-Villars and M. Masson. The whole collection, when completed, will number three hundred volumes. The latest addition to the series is "Les Machines Thermiques," by Prof. Aimé Witz. The theory of steam, hot air, and gas engines is well described by the author, and the relations between different heat engines are set forth in a manner which brings out clearly the special characters of their respective cycles.

THE third volume of the *Seismological Journal of Japan*, corresponding to the *Transactions* of the Seismological Society, has reached us. Prof. John Milne, F.R.S., contributes to it a paper on "Seismic, Magnetic, and Electric Phenomena," in which he discusses the evidence as to the connection between those phenomena. Observations are adduced which seem to show that there may be a connection between earthquakes and magnetic and electric manifestations. But, concludes Prof. Milne, though "a variety of experiments and investigations have been made to test whether earthquakes were preceded, accompanied, or followed by magnetic or electric phenomena, the results obtained do not guarantee the existence of such connections. It does not seem likely that earthquakes can result from electric discharges, and it has not yet been proved that they give rise to electric phenomena. When they have resulted in the displacement of large masses of rocky strata, as happened in 1891 in Central Japan, slight local changes in magnetic curves have resulted, but beyond this and effects due to the mechanical shaking of earth-plates, our certain knowledge is exceedingly small."

THE "Geological Sketch-Map of Western Australia," by Mr. H. P. Woodward, the Government geologist, shows in a very clear manner the geology of the explored districts; but it also shows of how large an area the geology is quite unknown. The scale is 1 : 3,000,000 (1 inch to 47·3 miles). The rock-divisions coloured are: Recent and Tertiary, Mesozoic, Palæozoic, Metamorphic, Crystalline (schists and granite), Volcanic, and Plutonic (basalt and granite). The distribution is shown of gold, copper, lead, tin, and coal; gold and copper are indicated by solid colour, which somewhat interferes with the general effect of the map, as the colours appear to represent special formations; the other minerals are shown by coloured lines. The chief gold-fields are situated on metamorphic rocks; a few are in the crystalline areas. The geology of the Coolgardie and Dundas gold-fields is not indicated. The map is clearly printed, both in its topography and colouring. It is published, for the Government of Western Australia, by G. Philip and Son, Fleet Street, London.

THE *Monist* for July contains an interesting article by Mr. Wm. R. Thayer, on Leonardo de Vinci as a pioneer in science. Of the thousands of MS. pages which this indefatigable experimenter left, one volume alone has been edited. At first no one could decipher them, for Leonardo wrote backwards from right to left. The pioneer work in science, astronomy, physics, geology, botany—in fact, the whole circle of the sciences—contained in this one volume is briefly but clearly sketched, and some of his pithy and epigrammatic notes are quoted. "His curiosity was insatiable; his methods were observation and experiment; his advance was from the known to the unknown. . . . To search out all things, to experiment and verify, to let his eyes test, and reason be the judge. This was Leonardo's method." Prof. Hermann Schubert's article on "Monism in Arithmetic" is a lucid statement of fundamental principles in continuation of a previous paper on "The Notion and Definition of Number."

EXPERIMENTAL psychology is represented in *Mind* by an article on "Mediate Association," by Mr. W. G. Smith, the results of which do not appear to be very conclusive. In the *Psychological Review*, Prof. Ladd describes the results of experimental work on the "direct control of the retinal field." A class of sixteen students were asked to close the eyes, allow after-images to die away, and then to cause, by attentively willing, a cross, circle, or some other simple figure, to appear in the retinal field. In two cases, where the results were successful, a coloured figure was distinctly visualised, and when the eyes were opened after these voluntary crosses were obtained, and were immediately focussed on a sheet of white paper, a cross was found to appear on the paper in the complementary colour. It is clear that these experiments open up interesting psychological problems. Prof. Jastrow, in the same journal, describes experiments on Helen Kellar, a blind and deaf girl. The sensibility of her finger-tips and the palm of her hand were found to be decidedly more acute than in the average individual; her verbal memory is decidedly above the normal; and she shows that sensitiveness to vibration and jars which has frequently been noted in the deaf.

MR. THOMAS R. SIM, Curator of the Botanic Garden, King William's Town, South Africa, has done good service by collecting and systematically arranging the records of Kaffrarian plants, in a pamphlet recently published at Cape Town. As a botanical district, Kaffraria is described as an oblong tract of country two hundred miles long by about one hundred miles wide, bounded at one end by the Karoo, and at the other end by Natal. Mr. Sim finds that the flora includes 2449 species, of which 1690 are dicotyledons, 656 monocotyledons, and 103 vascular cryptogams. The richness in species is shown by a comparison with Great Britain—an area much greater than that of Kaffraria, but containing only about 1700 species. The opinion is expressed that were the Kaffrarian plants as well known as our own, they would number more than three thousand species. Though Mr. Sim's list is incomplete, it is an excellent groundwork upon which a detailed description of the flora of the district surveyed may be built.

FOR some years past Lieut.-General Pitt-Rivers has supplied the means for physical and mental recreation near his country seat at Rushmore. He has had the Larmer Grounds laid out as pleasure grounds, and opened them free to the public every day. In 1887 the number of persons who availed themselves of this privilege was 15,351, and last year the number was 24,143. To those interested in breeding and acclimatisation, some of the animals in the grounds at Rushmore will be found of interest. But the museum at Farnham, established and supported by General Pitt-Rivers, is most attractive to us. It consists of eight rooms and galleries devoted mainly to antiquities, and containing models of the excavations carried on by the generous donor in the neighbourhood. During last year, more than seven thousand persons visited the museum. Another building open is King John's House at Tollard Royal. This building contains a series of pictures illustrating the history of painting from the earliest times, commencing with Egyptian paintings of mummy heads of the twentieth and twenty-sixth dynasties, B.C. 1200–528. Descriptions of all these places are given in a short guide, recently received, together with illustrations of some of the most striking features.

STATISTICS relating to the distribution of rain over the British Isles have been collated by Mr. G. J. Symons, F.R.S., in "British Rainfall," for thirty-four consecutive years. The volume for 1893 resembles former issues so far as the tabular matter is concerned; but the great drought rendered the year an exceptional one in several respects. At twenty-five stations, only about an inch of rain fell from the end of February to the end of June, that is, during a period of four months. A curious point mentioned in connection with the discussion of this remarkably low rainfall is that among the stations recording droughts exceeding 120 days, two of the three which head the list were situated on promontories or projecting parts of the coast. These were Dungeness, with a period of 127 days, during which only 1·27 inches of rain were measured, and East Dean (near Beachy Head), where 1·18 inches fell in 126 days. Several remarkably heavy falls in short periods occurred during the year. At Preston, 1·25 inches is estimated to have fallen in five minutes on August 10; but this record is hardly trustworthy. A fall of 0·62 inch in five minutes was measured at Shirenewton Hall on June 14. This is at the rate of 7·44 inches per hour. An extraordinary fall of rain occurred at Eastbourne in July, and a waterspout (or cloud burst) caused great damage on the Cheviots in the same month. Various other remarkable falls of rain are recorded in the notes which the observers send to Mr. Symons with the results of their rain-gauge observations. A discussion of the relation of the total fall of rain in 1893 to the average shows that, taking the whole of the British Isles, the deficiency was 14 per cent.

THE additions to the Zoological Society's Gardens during the past week include a Rhesus Monkey (*Macacus rhesus*) from India, presented by Mr. H. P. Nicholls; an Ocelot (*Felis pardalis*) from South America, presented by Miss Edith Zambra; two Ring Ouzels (*Turdus torquatus*) from Hungary, presented by Mr. John Young; a Herring Gull (*Larus argentatus*), British, presented by Mr. George Hayes; a Common Viper (*Vipera berus*) from Gloucestershire, presented by Mr. Barry Burge.

OUR ASTRONOMICAL COLUMN.

SOLAR ELECTRICAL ENERGY.—According to Dr. M. A. Veeder (*Proceedings* of the Rochester Academy of Sciences, vol. ii., July 1894), there is conclusive evidence that magnetic perturbations are not of thermo-electric origin, and are not connected with heat and light radiations. He holds, in short, that there is no correspondence whatever between the behaviour of magnetic storms and the manner in which thermal and luminous radiations are originated and propagated from the sun to the earth. His idea is that electrical disturbances upon the sun are transmitted to the earth not by radiation but by conduction through the impalpable dust and débris with which interplanetary space is filled. Such meteoritic particles are composed of good conducting material, and an examination of a large number of meteorites has shown Dr. Veeder that they all possess magnetic properties which might have been produced by long-continued induction. Therefore he thinks that the origin of magnetic storms is as follows:—"Particular portions of the sun's surface and cooler immediate surroundings are electrified by what has every mark of being volcanic action. The motion of rotation of the sun carrying forward these charged portions of its surface, develops currents dynamically which act inductively along lines of force wherever there is conducting material within their scope. There is no conveyance by radiation or in a manner similar to that in which heat and light are conveyed from the sun. The laws governing the process are entirely different from those of radiation, and have reference to the principles of conduction as they appear under the conditions existing in interplanetary space. It is a mode of solar action that is distinct, and that must be considered by itself."

TEMPEL'S PERIODIC COMET.—This comet, rediscovered by Mr. Finlay at the Cape, on May 8, is still visible, and promises to be within the grasp of moderately large instruments for some time. M. Schulhof points out in the *Astronomische Nachrichten* that it is desirable that the comet should be followed as long as possible. The object is becoming more favourably situated